Consolidate Crude Oil Production and Water Storage Tanks

NaturalGas EPA POLLUTION PREVENTER

Partner Reported Opportunities (PROs) for Reducing Methane Emissions

PRO Fact Sheet No. 506

Applicable sector(s):

■ Production ☐ Processing ☐ Transmission and Distribution

Partners reporting this PRO: ExxonMobil Production Co., Marathon Oil Company

Other related PROs: Eliminate Unnecessary Equipment and/or Systems

Compressors/Engines	☐
Dehydrators	☐
Pipelines	☐
Pneumatics/Controls	☐
Tanks	■
Valves	☐
Wells	☐
Other	☐

Technology/Practice Overview

Description

Crude oil is processed in the field to separate lighter hydrocarbons from produced waters. This process can lead to methane venting when the crude oil is stored in fixed roof tanks. Partners have reported reducing the quantity of methane emissions by consolidating and centralizing their liquid storage facilities.

Through a reduction in the number of field tanks, partners have been able to reduce methane emissions associated with standing losses due to temperature variations and working losses resulting from changing fluid levels and tank agitation. Consolidated storage facilities are also more economic for vapor recovery.

Methane Savings: 4,200 Mcf per year

Costs

Capital Costs (including installation)

☐ <$1,000 ☐ $1,000 – $10,000 ■ >$10,000

Operating and Maintenance Costs (annual)

■ <$100 ☐ $100-$1,000 ☐ >$1,000

Payback (Years)

☐ 0–1 ■ 1–3 ☐ 3–10 ☐ >10

Benefits

Reducing methane emissions was an associated benefit of the project.

Operating Requirements

The centralization and reduction of production tank batteries may require a facility redesign and the removal of unnecessary tanks and piping, while reducing maintenance costs.

Applicability

Oil fields with a significant decline in production should be good candidates for consolidation/reduction of field tanks.

Methane Emissions Reductions

Emissions, typically 50 percent methane, occur due to the venting of gas liberated from standing and working losses. Methane emissions reductions can be estimated using EPA's AP-42 guidelines or API's "E&P Tank" software program for specific tankage alternatives. The methane emissions are based on a consolidation of several wellhead tanks to a single central tank. Partner reported savings of 1,000 Mcf per year are the basis for this analysis.

Economic Analysis

Basis for Costs and Savings

Methane emissions reductions of 1,000 Mcf per year apply to the yearly reduction of methane emissions after consolidating storage tanks in one central vessel.

Discussion

This practice can provide a payback in less than 3 years. The implementation of this project may require the redesign of piping systems and the removal of unnecessary production storage tanks. Gas savings alone may not cover capital costs. Primary savings in operating and maintenance costs, plus gas savings, justify costs for consolidation.